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Blue skies for blueberries

By Marie-Josée Robichaud

Got the “blues”? Certainly hope so. Blueberries are as Canadian as maple syrup, and blueberry production is a multi-million-dollar industry that is thriving in Canada.

In terms of area under production, blueberries rank as the number one fruit crop in the country. Blueberries officially surpassed apples in top spot in 1996.

In fact, the amount of land planted in apples has been declining, while the number of acres of blueberries has been steadily increasing since the 1980s.

Blueberry sales have skyrocketed. In 2004, the farm-gate value of the crop reached nearly \$130.9 million, compared with sales of \$72 million in 1996. This represented an annual average increase of nearly 10%. The farm-gate value in 2004 was also a close second among fruits to the \$137.1 million value of the nation’s apple crop.

Canada has a long history of cultivating blueberries. For centuries, the “blues” were an important source of food and medicine for Aboriginal people, who would sun-dry the blueberries and grind them into a powder as way of preserving them.

Vista on the Agri-Food Industry and the Farm Community contains articles highlighting statistical insights on themes relating to agriculture, food and environmental issues.

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Note of appreciation

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Symbols

The following standard symbols are used in Statistics Canada publications :

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- P preliminary
- r revised
- x confidential
- A excellent
- B very good
- C good
- D acceptable
- E use with caution
- F too unreliable to be published

The sun-dried berries could then be mixed with corn and honey to make a kind of pudding, for example. Blueberry roots could be brewed to make a tea used to relax pregnant women.

Nowadays, they are considered a low-calorie food that is a good source of fibre and that has a high level of “anthocyanins”, an anti-oxidant claimed to be beneficial in fighting aging, heart disease and cancer.

Today, with new methods of preserving and processing blueberries, and their recent elevation to superfood status, the world’s appetite for blueberries is growing. Canada has an opportunity to play a major role in this growing industry.

This article profiles the industry, examining its current economic status as well as blueberry cultivation and the fruit’s popularity worldwide.

Blueberries play major role in Canadian agriculture

The American blueberry is a fruit and a member of the genus *Vaccinium*. Other members of the *Vaccinium* genus include the

European blueberry, wild bilberry, whortleberry and the American and European cranberry. Although it’s small in size, the blueberry is a big part of Canada’s agricultural landscape.

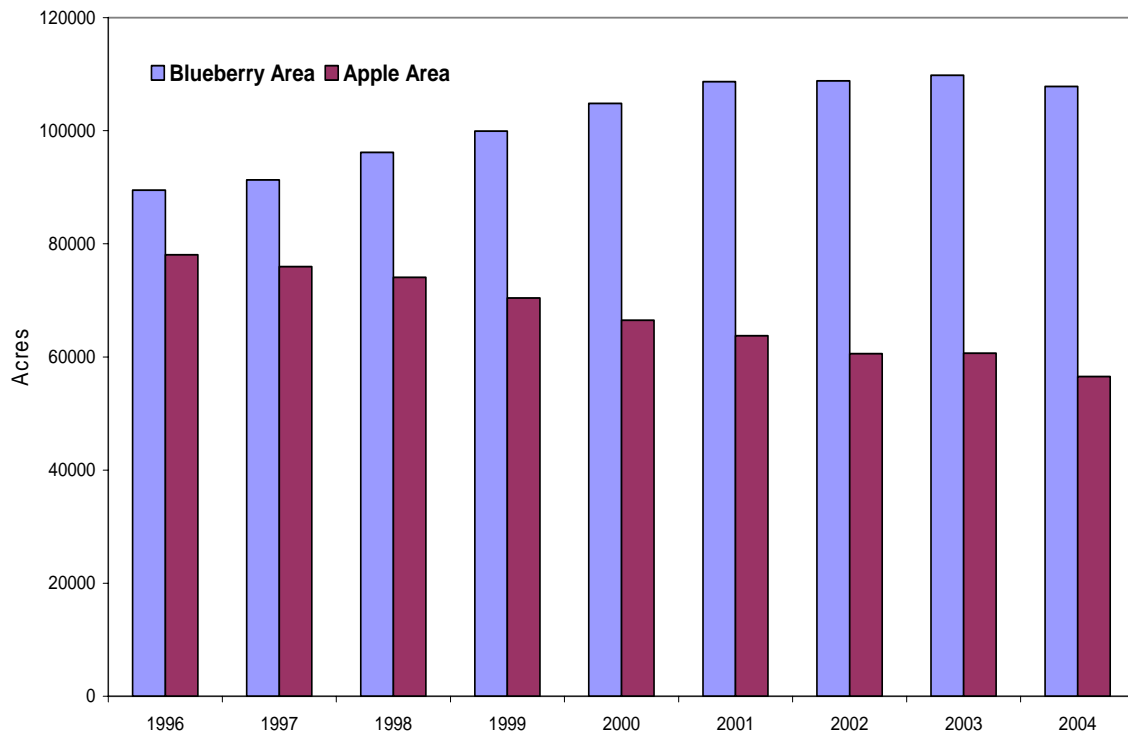
Canadian farmers cultivate two types of blueberries: high-bush, which bears bigger berries, and low-bush, which bears smaller berries. High-bush is the domesticated plant and the low-bush is the wild.

Most of the blueberries grown in eastern Canada are wild blueberries, while in British Columbia it’s the opposite. Virtually all of the blueberries in Canada’s most western province are cultivated, or high-bush.

According to the 2001 Census of Agriculture, Canada’s farmers had 108,679 acres in blueberries, up 21% from 89,492 acres in 1996.

Blueberries are now the number one fruit crop in Canada in terms of crop area - the apple is no longer in the top spot. Since the late eighties the amount of land planted to apples has been declining while the number of acres of blueberries has been steadily increasing. The balance tipped in 1996 when the blueberry officially became the number one fruit crop.

Blueberry and Apple Area, Canada



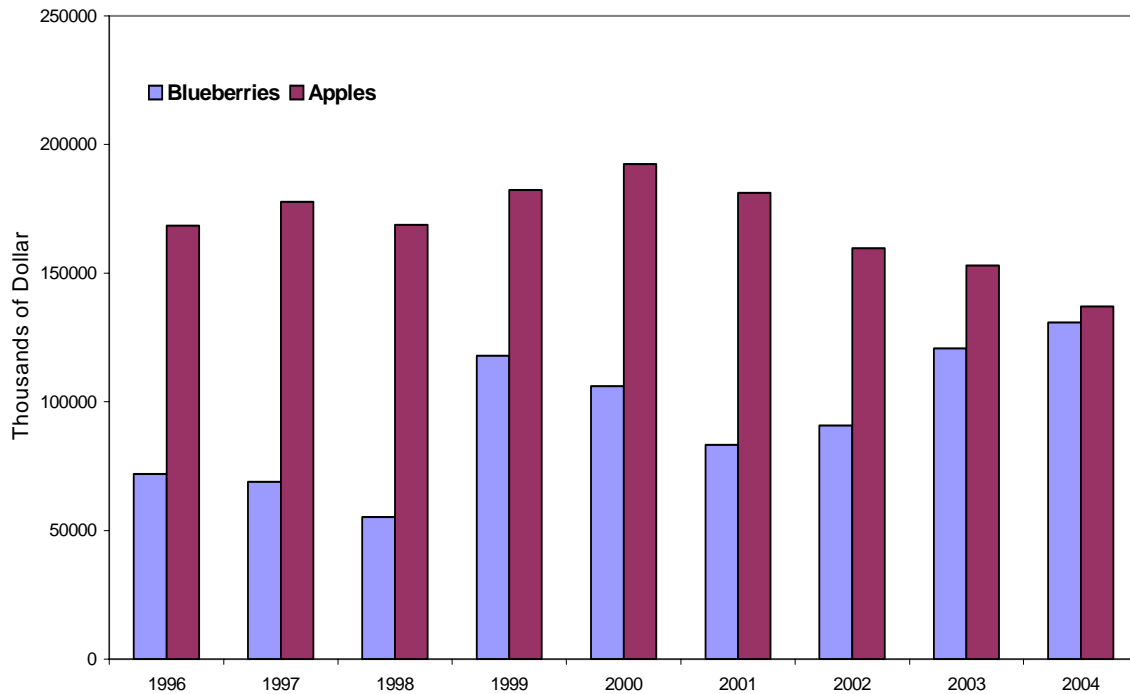
Source: Statistics Canada, Area, production and farm value of fresh and processed fruits, by province, annual, CANSIM Table 001-0009.

In addition, between 1986 and 2001, the number of farms that produce only blueberries doubled from nearly 500 to more than 1,000. This is the opposite of the general trend in agriculture where the total number of farms declined during the same period.

In 2001, each of these farms had an average of 48 acres in blueberries, compared with only 33 acres in 1986.

However, in terms of total fruit production, apples remain in first place. In 2004, Canadian farmers produced 370,000 tonnes of apples with a farm-gate value of \$137.1 million, outstripping the 79,000 tonnes of blueberries valued at \$130.9 million.

Value of Blueberry and Apple Production, Canada



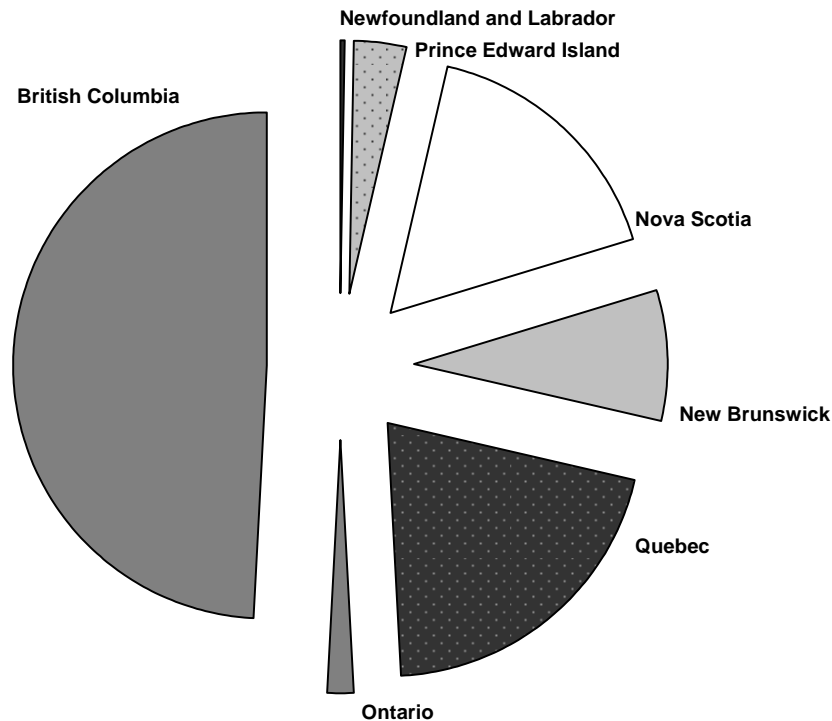
Source: Statistics Canada, Area, production and farm value of fresh and processed fruits, by province, annual, CANSIM Table 001-0009.

Three provinces account for vast majority of blueberries

Three provinces – British Columbia, Nova Scotia and Quebec – accounted for the vast majority (86%) of blueberry sales in 2004.

British Columbia had the biggest piece of the blueberry pie, with about 48% of total sales, or \$64.2 million. Quebec accounted for 21% and Nova Scotia, 17%.

Value of Blueberry Production By Province, 2004 (Dollars)



Source: Statistics Canada, Area, production and farm value of fresh and processed fruits, by province, annual, CANSIM Table 001-0009.

Blueberries are an important crop in Nova Scotia, New Brunswick and British Columbia. They represent 5 % of total provincial farm cash receipts in Nova Scotia, 3% in New Brunswick and 3% in British Columbia.

Provinces where blueberries are harvested have seen steady increases in the area devoted to blueberry production.

Nova Scotia was the largest producer in the East in 2004, with 37,230 acres of blueberries, closely followed by Quebec with almost 30,100 acres. British Columbia dominated in the West with 8,300 acres of blueberries.

Emphasis on exports as Canadian consumption has remained steady

Canada is the world’s number one blueberry exporter in dollar value terms. According to the United Nation’s Food and Agriculture Organization Canadian blueberry exports represent 37% of world blueberry exports. The United States, Chile, Ukraine, Netherlands and Romania are the other exporters of note.

Despite an abundant supply of blueberries from increased domestic production along with some imports from the United States, Canadian consumption has not changed significantly over the past 10 years.

Canadian imports of blueberries have ranged between 22,000 to 27,000 tonnes per year over the past few years or the equivalent of about 30% of total Canadian yearly production.

Consumption has remained steady at an average of 800 grams per person per year of fresh blueberries or fresh equivalent.

So, with more than 79,000 tons of blueberries produced in Canada in 2004, and national consumption remaining stable, what happens to all those berries?

Unlike many other fruits, where the trend is toward increased imports, a substantial proportion of Canadian production is exported. The main export market for Canadian blueberries is the United States, but some make their way as far as Japan.

Since 2000, exports have represented from between 84% to 100% of Canadian production. In 2004, exports of blueberries, fresh, frozen and canned totalled 80,000 tonnes, virtually all Canadian production plus the re-export of some of the blueberries that Canada imports.

Over 75% of all Canadian blueberry exports are in the form of frozen berries and in 2004 that amounted to 60,500 tonnes of frozen blueberries. Canada processed some 63,400 tonnes of blueberries by freezing, canning or dehydration. In 2004 almost all the processed blueberries were exported along with about 20,000 tonnes that were fresh and unprocessed.

The United States is the world's leading blueberry importer, followed by Germany. Canada is the third largest importer but unlike the other two, most of the blueberries imported by Canada are for processing and re-export and not domestic consumption.

High-bush versus low-bush

Domestication of the blueberry (high-bush) allows growers to control where they want to grow the blueberries. It also allows for bushes that are better adapted to the climate and are easier to pick.

High-bush berries can be picked mechanically instead of by hand because they are planted in cultivated fields in neat rows where machinery can be used. Highbush blueberries also produce higher yield per acre, delivering seven times as many berries per acre compared with lowbush berries.

Blueberries are delicate and require great care during picking. If the berries are to be sold for the fresh market, they have to be hand picked. Machine picked berries are usually not suitable for fresh consumption since they tend to be bruised.

Mechanical pickers are used almost exclusively for berries that are destined for processing. According to the Blueberry Council, about 85% of B.C. blueberries are picked by hand.

High-bush berries have been bred to appeal as much as possible to meet consumer preferences for taste, colour, shape and size, not unlike most other domesticated fruits and vegetables. High-bush cultivars are hardy plants and can produce berries for up to 50 years.

Wild blueberries often grow in terrain where agricultural machinery can simply not operate. In recent years, however, some producers have made efforts to improve the fields on which they grow to make it possible to use machinery.

Farmers have also tried to increase the productivity of their wild blueberry plants by 'encouraging' the plant to propagate itself further by clearing the land where blueberries

are already growing and generally making it even more ‘blueberry friendly’.

An estimated 70% or more of low-bush blueberries are now harvested by machine. The rest is harvested by hand using a raking tool that resembles a dustpan with tines. Both harvesting methods tend to bruise the fragile berry, so these berries are usually processed.

You may break your back picking them, but many people think wild blueberries taste best. Their taste is more concentrated, with a pleasantly sweet fruit balanced by the high pH, or acidity of the berry.

Most blueberries sold frozen

Food processors use blueberries in muffins, bagels, pies, yogurt, ice cream, jam, jellies, syrups, juices, teas, wines and even dried in breakfast cereals and cereal bars.

Fresh blueberries have a shelf life of two to four weeks at the most. Moulds are the number one threat, and fungicide applications are required to attain such a shelf life. Left untreated, fresh blueberries’ post-harvest shelf life is closer to one to three days. Therefore, most blueberries are sold frozen and are often further processed.

Most processes aim to prolong the shelf life of the berry. There are three main ways of achieving this: freezing, to prevent bacteria from proliferating; cooking, to kill the bacteria; and drying, to reduce the moisture content and inhibit bacterial growth.

New processing methods have led to new applications for blueberries. The newest conservation method, based on reducing the moisture in blueberries, goes beyond simply drying the berries.

The blueberries are processed using a drying method called “infusion.” Infusion, used primarily for cherries in the past, infuses the berries with sugar, essentially replacing the moisture in the fruit with sugar. Depending on the end use of the product, the moisture content can be controlled by the amount of sugar infused.

Infusion produces a blueberry that closely resembles fresh berries in that they mostly retain their shape, size and colour, and their taste is actually enhanced by the sugar infusion. These infused blueberries have an average shelf life of 12 months and these new conservation methods have opened the door to new applications for blueberries.

Moisture content is important. For example, if blueberries with high-moisture content are used in ice cream, they will have the consistency of a frozen ice pellet in the ice cream.

Similarly, if high-moisture blueberries are used in breakfast cereals, the cereal flakes will absorb the moisture (not to mention the colour) and end up as a soggy box of cereal. By adjusting the moisture and sugar content of the fruit, processors are able to control the “juiciness” or “chewiness” of their products.

Blueberry products: Gummy candies to chocolate bars and wine

Blueberries are used in some unusual products. In Sweden, instant blueberry soup can be found on grocery shelves. In China, consumers can find blueberry gummy candies, and chewing gum. In Germany, companies manufacture blueberry-filled chocolate bars.

And in Newfoundland and Labrador and Nova Scotia, enterprising businesses are using blueberries to make wine.

The Japanese appear to have some of the more unusual products, such as, frozen blueberry pizza and blueberry pasta. Japan also promotes this “superfood” for its health benefits. “Blueberry computer pills,” “Eye Candy,” and “Berrybright” blueberry pills are some of the products marketed to office workers to promote healthy eyesight, thanks to the high level of antioxidants in blueberries.

According to Health Canada, one cup of blueberries contains 86 calories, and these aren’t “empty” calories. In fact, one cup of blueberries contains only traces of fat and 10 milligrams of sodium. But they have no cholesterol, and they will supply 20 mg of vitamin C or about 23% of our daily requirements, four grams of dietary fibre or about 14% of our daily requirements, and 10 mg of calcium.

Blueberries are also busting at the seams with various anti-oxidants. Blueberries actually have one of the highest concentrations of anti-oxidants of all fruits and vegetables.

A study done on humans suggested that blueberry consumption can elevate blood level anti-oxidants. This would be due to the high level of “anthocyanins”, the anti-oxidant present in blueberries.

Pound per pound, wild blueberries pack the biggest punch. The anti-oxidants are found mostly found in the berry’s skin. The smaller berries offer more skin surface than their larger cousins when compared by weight. It might take two or three wild blueberries to equal the weight of one cultivated blueberry.